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EXAMINER

SILVER, DAVID

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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte KENNETH BOYD and JOSEPH NEAL

Appeal 2009-004119
Application 10/707,368¹
Technology Center 2100

Decided: June 9, 2010

Before JOHN A. JEFFERY, STEPHEN C. SIU, and JAMES R. HUGHES,
Administrative Patent Judges.

HUGHES, *Administrative Patent Judge.*

DECISION ON APPEAL

¹ Application filed December 9, 2003. The real party in interest is Ford Global Technologies, Inc. (Br. 2.)

STATEMENT OF THE CASE

The Appellants appeal from the Examiner's rejection of claims 1-9 under authority of 35 U.S.C. § 134(a). The Board of Patent Appeals and Interferences (BPAI) has jurisdiction under 35 U.S.C. § 6(b).

We affirm.

Appellants' Invention

Appellants invented an adaptive look ahead system and method for operating a vehicle. The system includes inputs providing vehicle information (e.g., steering wheel angle), and vehicle path information, which includes the radius of curvature of the road (on which the vehicle is operating) to a model. The system determines a curvature of the intended vehicle path, a look ahead scale factor based on the curvature of the intended vehicle path, an updated (revised) look ahead point based on the look ahead scale factor, and a steering wheel angle input for the model based on the updated look ahead point and the intended vehicle path. (Spec. ¶¶ [0002], [0009]-[0010].)²

Representative Claim

Independent claim 1 further illustrates the invention. It reads as follows:

1. A simulation system for simulating an operation of an automotive vehicle comprising:

² We refer to Appellants' Specification ("Spec.") and Appeal Brief ("Br.") filed July 23, 2007. We also refer to the Examiner's Answer ("Ans.") mailed October 30, 2007.

an input providing vehicle information and path information, an initial steering wheel input, and an initial look ahead point, wherein the path information comprises a road radius of curvature;

a controller having a vehicle computer model therein, said controller programmed to determine a curvature of an intended path from the path information, determine a look ahead scale factor as a function of the intended path radius of curvature, determine a revised look ahead point as a function of the look ahead scale factor, determine a steering wheel angle input to the computer model by comparing the revised look ahead point and the intended path, operate the computer model with the steering wheel angle input, and generate an output in response to the vehicle model and the initial steering wheel input.

References

The Examiner relies on the following references as evidence of unpatentability:

Huei Peng & Masayoshi Tomizuka, *Optimal Preview Control for Vehicle Lateral Guidance*, Research Reports, California Partners for Advanced Transit and Highways (PATH), Institute of Transportation Studies, UC Berkeley (1991) (hereinafter “Peng”).

R. S. Sharp & V. Valtetsiotis, *Optimal Preview Car Steering Control*, Vehicle System Dynamics, Supplement 35 (ICTAM 2000), pp. 101-117 (2001) (hereinafter “Sharp”).

Rejections on Appeal

The Examiner rejects claims 1-9 under 35 U.S.C. § 103(a) as being unpatentable over the combination of Sharp and Peng.

ISSUE

Based on our review of the administrative record, Appellants' contentions, and the findings and conclusions of the Examiner, the pivotal issue before us is as follows.

Does the Examiner err in finding the Sharp and Peng references are properly combinable, and does the Examiner provide a rationale for the reference combination?

FINDINGS OF FACT (FF)

Examiner's Findings

1. The Examiner provides a rationale for combining the Sharp and Peng references – specifically the Examiner cites to Peng,³ stating that:

It would have been obvious to one of ordinary skill in the art of steering control, at the time of the present invention, to modify Sharp's method of determining a look ahead scale factor with Peng's use of the radius of curvature. The motivation for doing so would have been to reduce error in calculating preview data by taking into consideration changes in road curvature.

(Ans. 4, citing Peng at 6.)

ANALYSIS

Appellants do not separately argue the patentability of claims 1-9, instead arguing claims 1-9 as a group. (Br. 5, 7.) We accept Appellants' grouping of the claims, and choose independent claim 1 as representative of

³ The Examiner mistakenly cites to Peng, page 5, paragraphs 1 and 2. We find this typographical error to be harmless, as the Peng reference explicitly describes the advantages of utilizing a road curvature in calculating a preview control function to reduce tracking error and resultant lateral acceleration. (Peng at 6.)

Appellants' arguments and groupings. Accordingly, we treat Appellants' claims 2-9 as standing or falling with representative claim 1. *See* 37 C.F.R. § 41.37(c)(1)(vii) (2007).

Appellants contend the Sharp and Peng references are not properly combinable. Specifically, Appellants contend "that one skilled in the art would not look to combine the references as suggested by the Examiner" (Br. 5), "the teachings of Sharp are specifically independent of the path characteristics" (Br. 6), and therefore, "no motivation to include road radius of curvature in the control scheme of the Sharp reference exists" (Br. 7). We interpret Appellants' arguments to assert that there is no motivation to combine Sharp and Peng because Sharp teaches away from utilizing road curvature in its calculations – i.e., "that Sharp teaches path tracking error and its teachings are independent of the characteristics of the path itself" (Br. 7).

Appellants do not contest or dispute the Examiner's findings with respect to the Sharp and Peng references. (Br. 5-7.) Rather, Appellants confine their arguments to the Examiner's combination of the Sharp and Peng references. Accordingly, we address only the combinability of the prior art references.

After reviewing the record on appeal, we adopt the Examiner's findings with respect to the Sharp and Peng references (Ans. 3-4, 8-10) as our own. The Examiner finds (and we agree) that Sharp teaches each feature of Appellants' representative independent claim 1, except that "the path information [includes] a road radius of curvature, [and that] the look ahead scale factor [is] a function of the intended path radius of curvature." (Ans. 4.) The Examiner finds that Peng describes "controlling a vehicle using an optimal preview control algorithm[, and] Peng teaches [an] input having

path information containing a radius of curvature (page 6 last paragraph) . . . [and] determining a look ahead scale factor as a function of the intended path radius of curvature (page 9 equation 17[.]).” (Ans. 4.) The Examiner also provides a rationale for combining the Sharp and Peng references. (FF 1.)

Thus, we find that the Sharp and Peng references collectively would have taught or suggested each feature of Appellants’ claim 1 to one of skill in the art at the time of Appellants’ invention. We also find that the Examiner articulates a rationale for combining the Sharp and Peng references based on “some rational underpinning to support the legal conclusion of obviousness.” *KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 418 (2007) (quoting *In re Kahn*, 441 F.3d 977, 988 (Fed. Cir. 2006)).

Therefore, we conclude, as did the Examiner, that it would have been obvious to an ordinarily skilled artisan at the time of Appellants’ invention to combine the Sharp and Peng references because modifying Sharp’s method for determining a look ahead scale factor with Peng’s teaching of utilizing a path (road) radius of curvature would have reduced “error in calculating preview data by taking into consideration changes in road curvature.” (FF 1.) We conclude that combining Sharp’s vehicle steering control system with Peng’s utilization of radius of curvature for vehicle lateral guidance and control is tantamount to the predictable use of prior art elements according to their established functions – an obvious improvement. *See KSR*, 550 U.S. at 417.

We are not persuaded by Appellants’ argument that the references are not properly combinable. (Br 5-7.) The Examiner has articulated a rational reason (motivation) for combining the references – thus, a motivation for

combining the references does exist. We do not find that the references teach away from one another, or the recited invention – which appears to be the thrust of Appellants’ arguments. We find that skilled artisans would not have been discouraged from following the path set out in Sharp and Peng, nor would they be led in a direction divergent from the path that was taken by Appellants. *See Kahn*, 441 F.3d at 990.

Whether a reference teaches away from a claimed invention is a question of fact. *In re Harris*, 409 F.3d 1339, 1341 (Fed. Cir. 2005). A reference may be said to teach away from the invention if the reference criticizes, discredits, or otherwise discourages modifying a reference to arrive at the claimed invention. *See In re Fulton*, 391 F.3d 1195, 1201 (Fed. Cir. 2004); *In re Haruna*, 249 F.3d 1327, 1335 (Fed. Cir. 2001); *In re Gurley*, 27 F.3d 551, 553 (Fed. Cir. 1994). “[W]hen the prior art teaches away from combining certain known elements, discovery of a successful means of combining them is more likely to be nonobvious.” *KSR*, 550 U.S. at 416 (citing *United States v. Adams*, 383 U.S. 39, 51-52 (1966)). We will not, however “read into a reference a teaching away from a process where no such language exists.” *DyStar Textilfarben GmbH & Co. Deutschland KG v. C.H. Patrick Co.*, 464 F.3d 1356, 1364 (Fed. Cir. 2006).

Moreover, the Examiner provides detailed findings and conclusions with respect to the Sharp and Peng references. (Ans. 3-4, 8-10.) Appellants did not file a Reply Brief, nor did Appellants provide any persuasive evidence supporting the assertions of alleged error in the Examiner’s positions. Accordingly, Appellants have not persuaded us to find error in the Examiner’s obviousness rejection of claims 1-9. Therefore, we affirm the Examiner’s rejections of the claims.

CONCLUSIONS OF LAW

On the record before us, we find the Examiner did not err in finding the Sharp and Peng references are properly combinable. Thus, on the record before us, we find the Examiner did not err in rejecting claims 1-9 under 35 U.S.C. § 103(a).

DECISION

We affirm the Examiner's rejections of claims 1-9 under 35 U.S.C. § 103(a).

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

msc

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